



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/524,825	02/18/2005	Hidetsugu Ikeda	285358US0PCT	1651

22850 7590 06/24/2009
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER

CROUSE, BRETT ALAN

ART UNIT	PAPER NUMBER
----------	--------------

1794

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

06/24/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary	Application No. 10/524,825	Applicant(s) IKEDA ET AL.	
	Examiner Brett A. Crouse	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-9, 11, 12 and 14-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 6-9, 11, 12 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is in response to the amendment, filed 27 March 2009, which cancels claims 1, 2, 4, 5, 13, amends claims 6, 8, and adds new claims 16-19.

Claims 6-9, 11, 12, 14-19 are pending.

Response to Amendment

2. The rejection(s) of:

claims 1, 2, 4, 13 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247;

claims 1, 2, 4, 13 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2 as applied to claim 6, 7, 14 and 15 above, and in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247;

claim 5 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2 as applied to claim 6, 7, 14 and 15 above, and in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247, as applied to claims 1, 2, 4, 8, 9, 11, and 13 above, and further in view of Ikeda et al., JP 2001-097897;

and

claim 5 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247, as applied to claims 1, 2, 4, 6-9, 11, and 13-15 above, and further in view of Ikeda et al., JP 2001-097897;

Art Unit: 1794

are overcome due to cancellation of the claims.

3. The rejection(s) of:

claims 6-9, 11, 14, 15 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247;

and

claim 12 under 35 U.S.C. 103(a) as being unpatentable over Shi et al., US 5,935,721, in view of Shi et al., US 5,972,247, as applied to claims 1, 2, 4, 6-9, 11, and 13-15 above, and further in view of Ikeda et al., JP 2001-097897;

are overcome by applicant's arguments.

Claim Rejections - 35 USC § 102/103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 1794

6. Claims 6, 7, 14, 15, 16, 17, 18, 19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shi et al., EP 1,009,044.

Shi (EP) teaches:

As to claims 6, 7, 14, 15, 17, 18, 19:

Paragraph [0010], formula (I), teaches an anthracene derivative of formula (I) for an electroluminescent device.

Paragraph [0011], formulae (VI), (VII), (X), (XI), teach derivatives of formula (I) which meet the limitations of general formulae (1) and (2) of claims 6, 14 and 15 of the instant invention. Formulae (X) and (XI) meet the limitations of formulae (1) and (2) when R₃ is aryl as provided for in the description of formula (1), paragraph [0010] and line 58, page 6, paragraph [0011]. Additionally, formulae (VI), (VII), (X), and (XI) provide substituted or unsubstituted naphthalene groups.

As to claim 16:

Paragraph [0026], attention is directed to compounds 47, 48, 50, 51, 52, 54, 55, 56, and 57.

For the aryl group of R³ it would further have been at once envisaged to select the aryl group from those exemplified by Shi.

In the alternative:

If it is found that the teaching of an aryl substituent as R₃ in formulae (X, XI) fails to render the claim anticipated. It would have been obvious to one of ordinary skill in the art to select an aryl group for the substituent R₃ in formula (X, XI) of Shi with the

Art Unit: 1794

expectation that the resulting compound would function as a charge transport material in the device of Shi as suggested by Shi in the description of R₃ and formula (X, XI).

Claim Rejections - 35 USC § 103

7. Claims 8, 9, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2 as applied to claims 6, 7, 14, 15, 16, 17, 18, 19 above, and in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247.

The teachings of Shi (EP) as in the rejection above are relied upon.

As to claims 1, 2, 8, 9:

Shi (EP) teaches:

Paragraph [0010], teaches that is an object of the invention to provide an anthracene derivative of formula (I) for use in the hole transport layer of an electroluminescent device. The passage also recites a multilayer device structure including an anode, cathode, and a plurality of layers in which the anthracene compound of formula (I) is used.

Shi (EP) does not teach:

Shi (EP) teaches the anthracene derivative of his invention as hole transport materials. Shi does not teach compounds of formula (I) as light emitting materials. However, Shi (EP) does teach anthracene derivatives as dopants in the light emitting layer of an electroluminescent device. Shi also teaches in paragraph [0003] it is known in the prior art that anthracene derivatives can be used in a light emitting layer.

Art Unit: 1794

Shi '721 teaches:

Column 2, lines 15-63, teach 9,10-dinaphthyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

Columns 11-16, compounds 14-23, provide examples of aryl substituents upon naphthyl groups bonded to the anthracene ring.

Shi '247 teaches:

Column 2, line 9 through column 3, line 4, teaches a 9,10-diphenyl anthracene derivatives as light emitting materials for electroluminescent devices. The passage additionally teaches an electroluminescent device comprising an anode, cathode and light emitting layer.

It would have been obvious to one of ordinary skill in the art to believe that anthracene derivatives of Shi (EP) would provide suitable and desirable fluorescent properties to an electroluminescent device of Shi when used as fluorescent materials in the light emitting layer as taught and suggested by Shi '721 and Shi '247 with a reasonable expectation of success due to their structural similarity with the compounds of Shi '721 and Shi '247. Shi '721 teaches a N-A-N substitution pattern and Shi '247 teaches a P-A-P substitution pattern. One of ordinary skill in the art would recognize that a N-A-P substitution pattern, as in Shi (EP), would result in compounds having similar fluorescent properties that would be useful as emissive materials as suggested in paragraph [0035] of Shi (EP) and taught for the anthracene derivatives of Shi '721 and Shi '247.

Art Unit: 1794

As to claim 11:

Shi (EP) teaches:

Paragraph [0032], teaches a preferred electroluminescent device structure which comprises a hole transport layer, emissive layer, electron transport layer.

Paragraph [0035], teaches that arylamines can be preferably used as dopants in the light emitting layer.

Shi does not teach:

Shi does not provide an experimental example of a device having an arylamine in the emissive layer. However, Shi does provide examples of the preferred device structure having a hole transport layer, emissive layer, electron transport layer in which the emissive layer comprises a dopant.

It would have been obvious to one of ordinary skill in the art use an arylamine compound in the light emissive layer of the preferred device structure of Shi as a dopant material as taught by Shi.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shi et al., EP 1,009,044 A2, in view of Shi et al., US 5,935,721, and Shi et al., US 5,972,247, as applied to claims 8, 9, 11 above, and further in view of Ikeda et al., JP 2001-097897.

The teachings of Shi as in the rejections above are relied upon.

Shi does not teach:

Art Unit: 1794

Shi does not provide an example of styryl amines as a component in the luminescent layer of an electroluminescent device. However, Shi does teach the use of aryl amines in the luminescent layer of an electroluminescent device.

Ikeda teaches:

Paragraphs [0008]-[0015], teach compounds of general formula (I) for use in electroluminescent devices. Paragraph [0014], section [2], provides a device structure of at least one organic luminous layer inter-electrode, wherein said layer comprises a compound of formula (I). Paragraph [0014], section [5], additionally teaches that the organic luminous layer can additionally comprise a recombination site morphogenetic substance. This is held to teach that the luminous layer can comprise multiple materials such as dopants. Paragraph [0014], section [7], teaches that the luminous layer can comprise a styryl amine as the recombination site morphogenetic substance.

Paragraphs [0018]-[0034], provide an expanded description of compounds embodied by general formula (I). Paragraph [0020], provides groups represented by Ar₁ including anthracene. Paragraph [0024], teaches that at least one of Ar₂ and Ar₃ of general formula (I) is a naphthyl derivative. Paragraphs [0027]-[0028], teach that the naphthyl derivative can comprise additional fused rings. Examples are provided in paragraph [0028] and include naphthyl and fluoranthenyl.

Paragraphs [0120]-[0127], examples, teach electroluminescent devices having a compound of formula (I) and a styryl amine having the structure equivalent to a triarylamine with a styryl substituent (PAVB) as a component of the light emitting layer.

Art Unit: 1794

It would have been obvious to one of ordinary skill in the art to incorporate a styryl amine, such as (PAVB), as taught by Ikeda and provided in the examples of Ikeda into the device of Shi as component of the light emitting layer with the expectation of success in forming an electroluminescent device.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

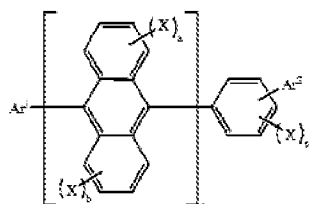
Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 6, 7, 8, 9, 11, 12, 14, 15, 17, 18, 19 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-6 and 8 of U.S. Patent No. 7,504,526. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Art Unit: 1794

As to claims 6, 9, 14, 15, 17, 18, 19:

Claims 1, 2, 3, teach an anthracene derivative of formula (I)



in which Ar¹ can be a naphthyl group. The claims also teach that X can be hydrogen or aryl groups with a and b independently representing an integer of 0 to 4. The claims additionally teach for Ar² a condensed aryl group of 10 to 50 carbon atoms. Ar² can be a triptycenyl group when Ar¹ is a naphthyl group.

Claim 8, teaches additional groups for Ar¹.

As to claim 7, 8, 9:

Claim 4, teaches an electroluminescent device comprising the anthracene of claim 1, formula (I) above. The claim teaches the anthracene derivative can be in the light emitting layer.

As to claim 11:

Claim 5, teaches the light emitting layer can additionally comprise an arylamine.

As to claim 12:

Claim 6, teaches the light emitting layer can additionally comprise a styrylamine.

Response to Arguments

Art Unit: 1794

11. Applicant's arguments have been fully considered but they are not persuasive.

With respect to the 102(b) / 103(a) rejection over Shi et al., EP 1,009,044 applicant argues Shi describes the anthracene derivatives as hole transport materials and does not teach or suggest the use of the materials in an emissive layer. The examiner respectfully disagrees. The argument directed to the use of the materials in a device is not commensurate in scope with the claims. The claims rejected under 102/103 Shi (EP) are directed only to the compound and a device comprising the compound without limitation to the function of the compound. Claims 6, 14, 15, 16, 17, 18, 19 are directed only to a compound and claim 7 specifies only an electroluminescent device comprising the compound.

With respect to the 102(b) / 103(a) rejection over Shi et al., EP 1,009,044 applicant argues the disclosure of Shi with respect to formulae (X, XI) is too broad to anticipate the claimed anthracene compounds and cites *In re Petering*. The examiner respectfully disagrees. The range of the number of carbon atoms taught by Shi for the aryl substituent groups is smaller than that contemplated by applicant. The instant claims recite an aromatic group having 6 to 50 nuclear carbon atoms. Shi teaches that R³ of formulae X and XI can be an aryl group having 5 to 20 carbon atoms. Thus, the range of carbon atoms of the aryl group of Shi is smaller than that contemplated by applicant.

Applicant also argues opposite Shi (EP) that Shi discloses no preferred narrowing of the compounds of formulae X and XI relative to formula (II) of the instant claims and as additionally described on page 3, lines 14-20 of the instant specification. It is noted by the examiner that the

Art Unit: 1794

point of attachment of Ar' of instant formula (II) is unspecified in the same manner as that of R³ of Shi.

With respect to the rejection over Shi applicant also argues that unexpected results are shown in the experimental results of the instant specification. Applicant points to table 1 of the specification opposite (DNA), 9,10-dinaphthyl anthracene, (an1) of the comparative example.

This is not found persuasive in that the effect of substituents upon either a symmetric or symmetric 9,10 diaryl substituted anthracene derivative results in improved device performance as indicated in the prior art of record. For instance, Shi '721 teaches 9,10-dinaphthyl anthracene derivatives. Example 6 of Shi '721 teaches further substitution of dinaphthyl anthracene results in improved performance over unsubstituted dinaphthyl anthracene such as in example 4. Shi '721 also teaches aryl substituents on the dinaphthyl anthracene skeleton. Similarly, Ikeda teaches 9,10 diaryl substituted anthracene derivatives. The 9,10 aryl substituents can be asymmetric with naphthyl and phenyl used in the example compounds, such as (A-6) and (A-8) which are shown in paragraph [0037]. Ikeda compares the performance of the anthracene derivatives to 9,10-dinaphthyl anthracene in the examples of table 1, paragraph [0128]. Comparative example 2, of table 1, uses dinaphthyl anthracene in the light emitting layer. Example 12, of table 1, uses compound (A-6) in the light emitting layer. In both Shi '721 and Ikeda the references provide data that indicate improved performance of 9,10 diaryl substituted anthracene derivatives having further substituents upon the aryl groups when compared to 9,10-dinaphthyl anthracene.

Art Unit: 1794

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett A. Crouse whose telephone number is (571)-272-6494. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, D. Lawrence Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1794

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. A. C./
Examiner, Art Unit 1794

/D. Lawrence Tarazano/
Supervisory Patent Examiner, Art Unit
1794